

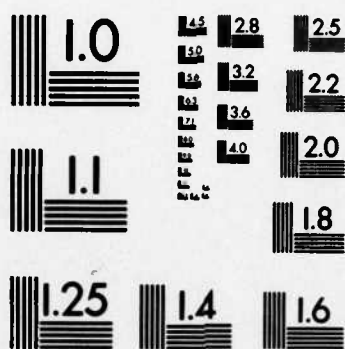
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FROM CUBA TO BASHKIRIA

Gilberto Caballero Almeida

It represents hope for thousands of burn patients who must bear terrible scars for the rest of their lives ... It's Epidermal Growth Factor, created at the Center for Genetic Engineering and Biotechnology.

In early June of this year, the Cuban President shared, with the Soviet people, his own people and the rest of humanity, concern about the news coming from the Bashkirian Autonomous Republic in the USSR.

A violent explosion -- followed by a severe fire in a gas line at a moment when two trains were passing through carrying 1200 passengers -- caused the deaths of some 500 individuals and hospitalization of more than 700, many in serious condition.

Fidel Castro, like many Cubans, immediately went to the Soviet Embassy in Havana to express his condolences for the tragic event, and having learned of the extraordinary number of survivors who had suffered severe burns in the disaster and knowing the results obtained in burn patients with a product created in Cuba by genetic engineers, he decided immediately to make it available to this brother country.

From the embassy itself the Cuban leader telephoned Dr. Manuel Limonta, Director of the Center for Genetic Engineering and Biotechnology, to find out about Cuba's availability of Epidermal Growth Factor (internationally identified by the initials EGF), which has had such excellent results in the treatment of burn patients in this country, in order to send it to the USSR together with experts on its application.

That same night, a few hours after the call to Limonta, Dr. Alejandro Martínez Montejo, a specialist in plastic surgery and burns and the chief of that department at the Ameijeiras Brothers hospital in Havana, left for Moscow with the product prepared in cream form.

Dr. Alejandro Martinez
is enthusiastic about
the results obtained
with EGF



While the plane was taking off with Martínez and his precious burden, the workers at the medical laboratory returned to their jobs to work all night in order to turn all the Epidermal Growth Factor available in Cuba into a cream.

At dawn, and after a self-sacrificing effort by all, Dr. Carlos Mella Lizama left for the USSR with the new batch -- a research scientist and Vice-Director of the Center for Genetic Engineering and Biotechnology, where the EGF is obtained, a product produced by only a handful of developed countries.

In addition, as international experts have recognized, among the few countries that produce it, Cuba is in first place in the field of clinical experiments with this medication among burn patients.

Although the Soviet specialists may have had some doubt about the EGF produced by Cuba, these quickly disappeared when in their presence and after the first treatments of a large number of patients, removal of the bandages revealed to the view of everyone the impressive results that had been obtained.

For 22 days in Moscow, the Cuban doctors attended and treated various individuals among the most difficult burn cases. In that short time, the successes achieved with the use of the Cuban Epidermal Growth Factor rapidly became news in the land of Lenin.

The results obtained with burned children have been very encouraging.

It was applied with great success in victims of the disaster from the violent explosion in Bashkiria, USSR



A Sensational Protein

From the start Drs. Mella and Martínez made it clear that EGF is not a Cuban invention, nor much less than one. It owes its discovery to the famous U.S. scientist Stanley Cohen, winner of the Nobel Prize for Medicine, who was the first researcher in the world to detect that the saliva of mother rats contained a substance (a protein) that stimulated opening of the eyes in baby rats, and in turn encouraged growth of the skin.

Numerous studies were performed based on this discovery of Cohen's. It was demonstrated that this protein, which he called Epidermal Growth Factor, also existed in the urine and saliva of human beings. Various developed countries, the U.S. at their head, took on the task of producing EGF from urine, particularly that of pregnant women, which resulted in an extremely expensive and complex process, particularly as concerns obtainment of the raw material, however odd that may seem.

"We do not think our Center for Genetic Engineering and Biotechnology is the wonder of the world ... It's more a question of the working style we've set up," was what Center Vice-Director Mella told me, after his return to the Cuban capital. And this working style, which starts basically from a devotion to science (a rare enough thing in other places) is according to all indications what made the institution one of the first in the world to obtain EGF by a recombinant method in yeast.

This process followed studies performed by Cuban researchers to define the structure of EGF. Once they knew the order of the amino acids of this protein, they synthesized its gene and, most importantly, obtained a recombinant yeast that contains the genetic information to produce EGF by plasmid-type transformations. These transformations are the foundation of genetic engineering.

The new Cuban medication reduces cicatrization time 40% in adults.

"When we have proven the indisputable benefits of a new medication, we do not have to run smack into the big wall that is by private medicine, that it doesn't exist in Cuba."



According to Dr. Mella Lizama, EGF has an enormous number of probable or potential applications, perhaps 60 or more. Among these, a number have been put into practice in the few countries that have been able to obtain the protein. But none except Cuba has so far developed the treatment we mentioned above.

The Cuban Way

It's common knowledge that many scientists have to face innumerable problems in certain countries in arranging for a discovery, above all in the field of medicine, to be put into practice with the necessary speed. I asked Mella Lizama why it was possible to perform all the necessary experiments and tests in Cuba to determine, how it was that the Cuban medication is not only more effective against burns, but moreover can be used without any risk of side effects or other problems that might appear in the patient.

"First of all," the distinguished Cuban researcher told me, "I have to emphasize that the world scientific community has very high principles about the veracity of tests, the safety of use of a medication you want to introduce ... We fully respect these principles and apply them in their totality.

And he points out:

"What allows us to get ahead faster than others in the application and introduction of a scientific, and particularly medical, success is that when we have proven the indisputable benefits of a new product at the laboratory level, we do not have to run smack into the big wall that is constituted in other countries by private medicine -- which almost always represents the special interests of certain companies, which at times do not consider it advantageous for the new medication to reach the market.

Burns, whether caused by boiling water or fire, are extremely painful and difficult to treat. EGF has amply demonstrated its efficacy in these lesions.



Dr. Carlos Mella exchanges opinions with a young quality control specialist.



"Since private mercantile interests don't exist in Cuba, it's easier for us to introduce a new medication, although -- I repeat -- we maintain all the parameters of research quality that the world scientific community requires."

It was at the very modern Ameijeiras Brothers hospital, located opposite the "jetty" of Havana -- a street running to the sea -- that we found Dr. Alejandro Martínez to get him to explain to us the advantages that were observed by his group of specialists in adult patients hospitalized there, as well as in burned children treated at the capital's William Soler children's hospital.

"EGF is a substance with magnificent qualities that stimulate the cicatrization process, and its principal action is on the skin," the doctor explained. "Among its advantages, our group found that it greatly reduces the cicatrization time for wounds. In children, as has been seen at William Soler, this reduction in healing time reaches around 50%, or more or less half, while in adults it is approximately 40%.

"On top of that, another advantage is that EGF permits us to define, faster than by the traditional method, how deep the lesion is and thus to determine promptly what are the next steps to be taken, and whether it is necessary to apply grafts, for example."

Dr. Martínez also points out that on many occasions, depending on the body parts that have suffered damage, the lesions may be deforming and result in unaesthetic scars.

"We observed with very great interest that the new skin that grows under the application of our EGF lacks the usual exaggerated scars that form part of the traditional processes for treating burns," the experienced specialist adds, "and above and beyond that, significantly stimulated by the factor, the

skin recovers its pigmentation, that is, it recovers its color until it matches the unaffected areas, and the hair grows back."

To "Manufacture" Skin

The cream developed by the scientists under Dr. Mella's direction has other very important advantages, one of which is that it makes it possible for the burn to arrive at its dry stage in a much shorter time, Martínez emphasizes, adding:

"Nor can we forget that when burns are very deep, in general we have to do grafts, and with EGF one can create a magnificent base on which to place the tissue, since the protein stimulates the formation of new blood vessels and these immediately distribute the necessary blood to the grafted material so that it 'takes' and doesn't die."

I asked Dr. Martínez about the evolution of the lesions, i.e., whether the positive results he and his colleagues observed are maintained over time.

"We've seen," he answered, "how in the long term skin obtained with EGF maintains the same characteristics as normal, since its pigmentation recovers and there is no difference in color between the two, there is no excessive hardening of the scars, and the new tissue comes to have its full elasticity." In addition, both specialists report that in vitro tests with production of skin using Epidermal Growth Factor are in progress, with success. A fragment of skin from a burn victim who needs a graft is taken, measuring no more than a square centimeter, and with the help of EGF one gets a piece of skin measuring half a meter in only a week. This is extremely important, since this type of graft must be done with the patient's own skin -- to avoid rejection -- and in this way one has to remove only a minimum piece of skin.

They are continuing their research, now on a broader scale, to include all Cuban hospital institutions that treat burn patients, so that in every corner of the country it will be possible to apply EGF immediately to anyone who needs it.



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